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CONVAIR ASTRONAUTICS

CONVAIR DIVISION OF GENERAL DYNAMICS CORPORATION OF CONTROL SUDJECT OF CONTROLS and each ... governous state state N nati Report No. 742248-2 only " " " roval of: 66 Hq. Samou, i.A., Ca. 90045 **ASTRONAUTICS** Attn: SMSD FLIGHT PROOFING TEST REPORT က FOR D/AIG ELECTRONIC PROGRAMMER 00 532.00 Dwg. No. 27-41001

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MO.	DATE	87	CHANGE	PAGES AFFECTED
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A	9-24-59	HIO/SHE	Switch #9 & #10 state to (High to LO & LO to High)	3
A	9-24-59	HIO/1999	8.0 * 1 to 7.5 * 25 volts	4 4 7
A	9-24-59	HIO/ME	Added Para. 4.1.8 (d)	8
A	9-24-59	HIO/YP&	Added Para. 4.1.9 (h)	9

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SUMMARY:

The data presented in this report represents the results of the Flight Proofing portion of the Pre-Production Test being performed on a D/AIG Electronic Programmer S/N 4₂ Part No. 27-41001-837, according to the tests applicable in Procedure No. 7A2248-2

Results of the vibration testing are summarized in the following table:

Data	Axia	Failure	Comments
10-21-59	Y	None	None
10-21-59	Z	Pitch Program intermittent at 250 ope.	The failure was caused by a micro- phonic transistor. The specimen was repaired and wib. testing resumed.
10-26-59	Z	None	. None
10-26-59	Y	None	None
10-27-59	x	Switch #19 failed at 100 cps.	The failure was caused by a broken solder pot in the harness. While the specimen was being checked-out the arm-safe mechanism failed. The failure was caused by a microswitch. The specimen was repaired and vibration testing resumed.
10-31-59	x	None	None
11-3-59	Z	None	None
11-3-59	¥	Switch #11 was intermittent.	The failure was caused by the coil of a relay opening and closing under vibration. The specimen was repaired and teating resumed.

The operational acceleration test was completed with no failures or outof-tolerance readings. The humidity indicator showed too much humidity
inside the specimen after the combined -65°F and altitude (3.44 inches
Hg.) test. The specimen was taken to the factory for a leak test and
purging. No leaks were found, and the remaining temperature-altitudehumidity tests were satisfactorily completed.

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1.0 GENERAL INFORMATION:

- 1.1 PIRPOSE The purpose of this report is to describe the test equipment and procedure required for the Pre-Production Testing of components in accordance with the individual component specification and the latest issue of Convair Specification No. 7-00209.
- 2.2 ENVIRONMENTAL TESTS The environmental tests prescribed in this procedure are written to conform to the individual component specification and the current issue of Convair Specification No. 7-00209. In the event of conflict between specifications, the component specification shall take precedence.
- 1.3 <u>HOMENCIATURE</u> The specific component under test shall be referred to as "Test Specimen" in this procedure.
- 1.4 TEST DATA One copy of this report shall be bound into a data book and all original data and operating time, in minutes, recorded thereing. The data book shall be kept on file in the Components Test Laboratory.
- 1.5 <u>HITHESSING</u> Data from all tests outlined in this procedure shall be witnessed and signed by an Air Force representative or his designated alternate.
- 1.6 STATEMENT OF TESTS The Initial Satisfactory Performance Test shall be performed on the Test Specimen prior to all other tests. The nequence of subsequent tests shall be determined by the availability of environmental facilities.
- 1.7 <u>VARIATIONS</u> Variations to Convair Specification No. 7-00209 and/or the individual component specification shall be issued in the form of a memorandum to the applicable portions of this procedure.

Deviations to the above specifications shall be processed by the Design Engineering Group based on the variations, if any, outlined in this procedure.

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2.C DESCRIPTION AND REGULEREMENTS:

2.1 <u>DESCRIPTION OF TEST SPECIMEN</u> - The test specimen covered by this procedure consists of an electronic flight programmer, D/AIG series Dwg. #27-il001.

- 2.2 <u>REFERENCES</u> Applicable portions of the following publications shall form part of this procedure:
 - a) Convair Spec. No. 7-00209B, "Environmental Design Conditions and Environmental Test Procedures for WS-107A-1 Equipments".
 - (a) Convair Spec. No. 27-04325 D/AIG Autopilot Subsystem Specification.
 - c) Convair Spec. No. AZM 27-200, Test parameters, D/AIG missile.

2.3 OPERATING REQUIREMENTS AND TOLERANCES -

2.3.1 Input Power Requirements:

- a) The test specimen shall be supplied with 3 phase 115 wolt ± 2%, 400 cycle ±0.5% voltage at the proper input terminals.
- b) The test specimen shall be supplied with a 28 wolt 12 wolt direct current source at the proper input terminals.

2.3.2 Control Requirements:

a) Supply the test specimen with the proper voltages and loads as shown in Dwg. No. 27-killi.

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- 2.0 DESCRIPTION AND REQUIFE ENTL: Continued
- 2.3.3 Output Requirements and Tolerances:
 - a) Supply switches #1 #19 with the loads listed in the following table. The outputs of the various switches are required to change state as indicated in the table.

Switch	age out to provide the same analysis of decision	a parameter de la composition della composition	Time	antar - nasangganna nagari ya e ni dan fingilar ni uzuya e suari da da - diribili dilabahan salambil - su	Voltage
ch_	load	State	Heference	Timo	Tolerande
1 .	+li MA at +10.5V	Us min to 1 o	dê a .ea	+100 +54 1.EC	
 	-12 MA at -3.0V -0.5 EGOHM at +12.5V	. High to lo		+100 ±50 (#B0	
	-1. KA at 8.0V	High to Lo		+3.0 Sec. ±25 LEC	₹5
2		La ta Hish	itaen	+3.7 Sec. +500.M	SEC .
	>0.5 MEGOHM at +12.5V	Lo to High	Stage	+100 150 MSEC	r. d.
	-8 MA at -3.0 V	High to Lo	Stage	+6.7 Sec ±50 NSEC	\\ \cdot \cdot \\ \cdot \cdot \\ \cdot \cdot \cdot \cdot \\ \cdot \cdot \cdot \cdot \cdot \\ \cdot
3	>0.5 MEGO N at +12.50	Lo to High	Sus c/o	0 +100 =0 ASEC +5.7 Sec ±50 MARC	. , , o
1.	-L MA at -8.0 V	to to uten	2 01/10		. 2.5
	+4 MA at +12.5V	Lo to High	Stage	+100 +50 MSEC	, ,
1	-Li MA at -3.0V	High to Lo		+10 .ec. ±1.0 .ec.	4 호
5		Lo to High		0 +1.00 -0 PSEC	volts
	+4 MA at +12.5V	Lo to High	Stage	+100 ±50 % EC	. •
6	-4 mi at -8.0 y	High to Lo	Stage	5.0 Sec ±100 %300	
7 .	+4 MA at +12.5V >0.5 MEGOLM at -8.0V	inten w wi	2 cage	1	
*	+2 MA at +12.5V	High to Lo	Launch	15 Sec ±50 MSEC	•
9	>0.1 MEGOHY at -8.0 V	Jo to High	_ Launch	19 Sec ±50 XSEC	
	+2 MA at +12.5V	illen to Lo	Launch	2 Sec ±50 MS50	' i
10	>0.1 MECOHM at -8.0 V	To to High	Launch	15 Jec ±50 MSEC	
•	and the second	المحدد المحدا		A	92
l n	800 - 1570 OHMS	Lo to High	Launch	2 Sec ±50 % BC	. 1
	355 35 5.22	High to Lo		19 Sec +100 MSEC	86
				-5 0	57.
				į	m ₹
		4	e i and a new plane was referenced.		35.55
	02 (4.06	ila ea Himb	it a.a.	100 ±50 Mugc	
12	27 CHIMS	Lo to High.	Stage	*25	年 2.
13	27 UHMS	Lo to High	itage	3.1 Sec -0 MSEC	• •
1					÷ 0
14.	27 OHUS	Lo to High	Stage	64 Sec ±3 Sec	402t
16	27 OHMS	Lo to High	Ver c/o	3.0 Sec ±1.00 MSEC	
					60.
17	27 OIMS	Lo to High	Ver c/o	1.0 Sec ±100 MEC	1 6
1	AR SIRKI	i a a we a	11/-	I E O Cho Alon We de	
18 .	27 JHPS	ito to High,	A MIL C\C	5.0 50c ±100 45 C	No. 1
19	27 VIVS	Lo to High	Sus c/o	0 - 0 :SEC	E !
: * 7 .	MI VIDE	A TATE OF THE MEAN AND ADDRESS.		procedure source in the term the transfer of the source o	

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2.0 DESCRIPTION AND REQUIREMENTS-

2.3.3 Output Requirements and Tolerances - Continued

- b) Terminals (J) and (A) of plug U3J3 shall provide a maximum in-phase or out of phase A.C. voltage of 7.5.±2.6 volts, when this circuitry is activated by the roll set input voltage of proper polarity. The time required to go from one maximum to the other small be 70 ±20 seconds.
- c) Terminals (L) and (F) plug U3J2 shall provide a 400 cpm voltage whose magnitude varies with slapsed time from launch command in the manner described below. The voltage tolerance is ±0.125 volts and the timing tolerance is ±1.0005.

	THE (SLC)	(CLIOV) BEATLOW		
	0	0.2 (maximum)		
	15	2.2		
•	27	1.7		
	2 7 39	1.9		
	51:	1.8		
	511	1.6		
		1.3		
	74 99	1.0		
	105	0.7		
	120	0.6		
	t/ 16.i	٠ • ر		

- d) The arm sale switch shall provide a change of state from arm to safe or from safe to arm in 10 ± 5 seconds.
- c) The test specimen shall respond with the launch sequence of events as described in paragraph 2.3 upon the opening of the circuit between terminals (λ) and (λ) of 1333.
- The test specimen small respond with the stage sequence of events as described in paragraph 2.3 upon the application of *28 volts to terminal (c) of U3J3.
- if) The test specimen shall respond with the sustainer cut off sequence of events as described in paragraph 2.3 upconfitte application of *28 volts to terminal (d) of UJB.
- h) The test specimen simil respond with the vermier cut off sequence of events as described in paragraph 2.3 upon the application of +23 volts to terminal (p) of F333.

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3.0 TEST PACILITIES AND ROUTPMENT:

3.1 INITIAL SATISFACTORY PERFORMANCE THAT EQUIPMENT -

3.1.1 This equipment is the same as that required for the operating cycle.

3.2 OPERATING CYCLE TEST EQUIPMENT -

- 3.2.1 The operating cycle test equipment is test lab furnished and consists of equipment described in drawing number 7A2182-D.

 In addition to this equipment, the following items of standard Convair Equipment are used:
 - a) Sanborn Recorder, 8 channel with 3 serve monitor preamplifiers, and 5 D.C. pre-amplifiers.
 - b) Components Test Lab furnished 400 cycle power supply, 115-200 wolt, 3 phase, 300 VA.
 - c) Esterline-Angus Event Recorder, 40 channel, 28 volt, with external drive.
 - d) Vacuum tube volt meter, HP model 410B.
 - e) Power supply, 28 volt, 10 amp, Sorensen and Co., model E-28-10.
 - f) Equivalent or additional equipment may be used if necessary.

- 3.0 TEST FACILITIES AND EQUIPMENT: (Continued)
- 3.3 ENVIRONMENTAL EURIPMENT -
- 3.3.1 TEMPERATURE ALTITUDE HUNIDITY EQUIPMENT
 - a) Remco Model WFA-100-45 environmental chamber with associated controls, or equivalent.
- 3.3.2 VIBRATION EQUIPMENT
 - a) HB Model C25-E vibration exciter with associated controls, or equivalent.
- 3.3.3 ACCELERATION TEST EQUIPMENT
 - a) Genisco Rotary Accelerator Model C159, with associated controls, or equivalent.
- 3.3.4 Lalt Atmosphere Test Equipment
 - a) Industrial Filter and jump company, Salt Atmosphere chamber, type Cal-1 and associated controls, or equivalent.
- 3.3.5 and and Dust Test Equipment
 - a) Meatt Engineering Company, Sand and Dust chamber, Model SCHL-12 and associated controls, or equivalent.

- 4.0 TEST PROCEDURES:
- 4.1 TEST COMDITIONS -
- 4.1.1 ATMOSPHERIC COMPITIONS Unless otherwise specified herein or in the test specimen specification, all tests shall be performed at an atmospheric pressure between 28 inches and 32 inches of mercury, a temperature between ÷60°F and 95°F, and a relative humidity of not more than 90%. Data from tests performed at other than the atmospheric conditions specified shall include corrections for instrument compensation.
- 4.1.2 TOLERANCES The maximum allowable tolerances on test conditions shall be as follows:

	Temperature	14
b)	Berometric Pressure	25\$
0)	Relative Humidity	±10%
d)	Vibration Amplitude	±10#
•)	Vibration Frequency	22
I)	Acceleration	±10%
g)	Shock	±10%

- 4.1.3 <u>MEASUREMENTS</u> All measurements shell be made with instruments whose accuracies have been certified by the Astronautics Standards Laboratory and which been a current calibration decal.
- 4.1.4 TEST SPECIMEN OPERATION Operational and functional tests of the test specimen shall be conducted as cutlined in this procedure.
- ADJUSTMENTS AND REPAIRS DURING TESTS No adjustment, maintenance, or repairs of the test specimen, other than those specifically stated in this procedure, shall be allowed after the start of the Initial Satisfactory Performance Tests. Exceptions to this shall be made when in the opinion of the Components Test Lab and designated witnesses, adjustments, repairs, or maintenance are not due to faults in design, workmanship, materials, or to the test conditions imposed.
- 4.1.5 TEMPERATURE STABILIZATION Temperature stabilisation has been reached when the temperature of the largest centrally located mass of the test specimen does not vary more than 5°F from the temperature ambient to the equipment.

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- b.0 TEST PROCEDURES: (Continued)
- h.1.7 PRELIMINARY INSPECTION The test specimen shall be examined visually prior to any other test to determine that the specimen meets the requirements of workmanship, identification markings, external dimensions, finish, cleanliness, and proper inspection approval.
- 4.1.8 INITIAL SATISFACTORY PERFORMANCE TESTS The following tests shall constitute the Initial Satisfactory Performance Test for the test specimen:
 - a) The Initial Satisfactory Performance Test is identical with the operating cycle test as outlined in paragraph lill, except as in b) through c) below.
 - b) Terminals J and A of U3J3 shall be monitored while the roll set switching circuitry is actuated. The output voltage as measured at these terminals shall vary from a maximum inphase voltage of 7.5 +2.5 volts to a maximum out of phase voltage of 7.5 +2.5 volts in an operating time of 70 120 seconds.
 - c) The arm-safe switch in the test specimen shall be operated by actuating the external arm-safe curcuitry. Successful operation as indicated by the arm-safe indicator lights shall occur in 10 15 seconds.
 - d) All values of time and voltage obtained during the Initial Satisfactory Performance Test shall be recorded on the appropriate data sheets.
- U.1.9 OPERATING CYCLE TEST The following tests shall constitute the Operating Cycle, the results of which shall form the basis for indicating satisfactory performance of the test specimen under a. licands enviroughtal tests.
 - a) The test specimen shall be connected to the test equipment as shown in Figure 1.
 - b) Apply the proper input voltages to the test specimen as outlined in paragraph 2.3.
 - c) Launch Command shall be sent to the test specimen at zero (reference) seconds.
 - d) Staging command shall be sent to the test specimen at approximately +100 seconds.

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4.0 TEST PROCEDURES: (Continued)

4.1.9 OPERATING GYPLE TEST - (Continued)

- e) Sustainer out off command shall be sent to the test specimen at approximately +210 seconds.
- f) Vernier cut off command shall be sent to the test specimen at approximately +215 seconds.
- g) During the operations described in steps (c) through (f) all outputs described in paragraph 2.3 shall be monitored for indication of proper operation. A record shall be made of these outputs which will be examined to determine compliance with paragraph 2.3.
- ii) With the exception of the input voltages, on the data sheet a check mark in the appropriate place shall denote the reading is in tolerance. In the event of an out of tolerance reading the value of the reading shall be placed in the proper place and a note shall be made on the data sheet.

THE PROCEDURES: (Continued) 4.0

OPERATING CYCIE A - To be performed after tests specified in 4.1.9.1 Paragraph - Not applicable.

4.1.9.2 OFFIATING CYCLE B - To be performed after tests specified in Paragraph - Not applicable.

PASS

- 4.0 TEST PROCEDURES: (Continued)
- 4.2 TEMPERATURE - ALTITUDE - HUMIDITY TESTS -
- 4.2.1 MISSILEBORNE EQUIPMENT - Missiletorne equipment shall be subjected to the following test sequence, as applicable.
- 4.2.1.1 MISSILEBORNS EQUIPMENT OTHER THAN POR MOUNTED CANISTERS - Not applicable.
- HISSILEBORNE PUD-MOUNTED CANISTERS The Collowing test sequence 4.2.1.2 shall be conducted in a Temperature - Iltitude - Humidity Test Chamber in the order specified. A thermocouple shall be placed in good thermal contact on the largest centrally located internal mass within the test specimen, or in any other location necessary to check temperature stabilisation.
 - a) Place test specimen in chamber and supply with sufficient cooling air to maintain the test specimen skin temperature at plus 40%

Perform tests as specified in applicable Paragraph of 4,1,9 and record data.

b) Stabilize test specimen temperature at plus 125°F for a period of one hour.

Maintain chamber temperature and subject test specimen to radiant heat at the rate of 360 BTU/sq.ft./hr. upon its largest surface area for a period of 4 hours.

Determine the maximum test specimen temperature during this test for use in following tests requiring a "maximum nonoperating temperature".

c) heduce chamber temperature to minus 65°F at a rate of 0.75 to 1.35 T per minute, and maintain at this temperature for a period of 8 hours or until the test specimen stabilises, whichever is londer.

During or at the end of the above perios, reduce the chamber absolute internal pressure to 3.44 inches of mercury for a period of 1 hour.

Return chamber to approximately 30 inches of mercury. Allow chamber to return to ambient temperature and the test specimen temperature to stabilise.

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4.0 TEST PROCEDURES: (Continued)

4.2.1.2 MISSILEPORNE POD-MOUNTED CANISTERS - (Continued)

o) (Continued)

With sufficient cooling or heating air to maintain the test specimen skin temperature between 40°F and 80°F, perform tests as specified in applicable Paragraph of 4.1.9 and record all data.

d) Increase chamber temperature at a rate of 0.75 to 1.25 per minute to maximum non-operating temperature, or 160 per ever is greater, and maintain at a relative humidity of not less than 95% for a period of 4 hours, or until the test specimen temperature stabilises, whichever is longer.

Remove excessive moisture and condensate from chamber prior to performing the following altitude tests.

Reduce the chamber internal absolute pressure to 3.44 inches of mercury (relative hundrity may be decreased) for a period of 1 heur, and then return the chamber pressure to approximately 30 inches of mercury and a relative hundrity of not less than 95 percent.

Alley the chamber to return to ambient temperature and the test specimen temperature to stabilize.

Operate test specimen while supplying sufficient heating or cooling air to maintain the test specimen skin temperature at 80°F.

Perform tests as specified in applicable Paragraph of 4.1.9 and record data.

Remove excessive mointure and condensate from chamber prior to performing the following altitude tests.

Immediately after the above functional test, shut off the cooling or heating air to the test specimen, and operate the test specimen while the shanber internal absolute pressure is reduced to not more than 1 mm of mirrory as rapidly as possible, but not to exceed 10 minutes (no humidity control), and record all data required for the test specified in the applicable Paragraph of 4.1.9.

4.2.2 TESE (EDIND SUPPORT FOULTHOUT - Not applicable.

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- 4.0 TET PROCEDURE: (Continued)
- h.2 TEMPERATURE ALTITUDE MUNIDITY TESTS -
- h.2.1 ISSILEBORNE and 1.0 bit Not applicable.
- 1.2.2 TEST SHOWN Str. onl se cir She not applicable.
- 4.3 SALT ATMC PIEnt TEST The test specimen shall be mounted in the test chamber.

Increase the temperature of the test chamber to 95°F 23°F and maintain at this temperature.

Compressed air shall be hubbled through a calt solution causing a saline vapor to permente the chamber. Codium chloride of C.i. quality shall be used. The concentration of salt shall be 2.5 per cent by weight, with a hydrogen ion concentration of pH 6.8 to 7.2.

Buration of the Salt Atmosphere Test shall be at least 100 hours.

At the completion of the test period, the specimen shall be operated according to the test specified in the applicable paragraph of h.1.9 and a record shall be made of all data.

- b.l. Thou, whistance tests shall be performed according to the following procedure:
- h.h.1 PROCEDURE Not apulicable
- L.L.1.1 <u>0809.33/9</u>-
 - Orono I Chaetamium globosum 1554 10/2.h Myrotnecium vennuari. 1544 153h. 1.
 - Group II... Rhimopus nigricans S.N. 37 or Supergillus niger 150A Tc215-h2h7.
 - uroup 11 Appengillus flowes desCha. 2 or Aspengillus tormas "App 874.
 - Group IV Penicillium Juteum USDA 1330.1, Penicillium sp
 - Group V Memmonicila echinata (1/4 m.) or Fusarium moniliforme (5Da 100h.1.

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4.0	TEST PROCEDURES: (Continued
4.5	malk TELF - The rain test shall be performed according to the following procedure:
15.1	PROCEDURE - Not applicable.

- 4.0 TEST PROCEDURES: (Continued)
- 4.6 SAND AND MOST TEST The sand and dust test shall be performed according to the following procedure:
- 4.6.1 PROCEDURE The test specimen shall be placed within the test chamber equal to that described in specification MIL-C-9436 and the sand and dust density raised and maintained at 0.1 to 0.5 grams per cubic foot within the test space. The relative humidity shall not exceed 30 percent at any time during the test. Sand and dust used in the test shall be of angular structure and shall have characteristics as follows:
 - a) 100 percent of the sand and dust shall pass through a 100 mesh screen, U.S. Standard Sieve Series.
 - b) 98 t2 percent of the sand and dust shall pass through a 140 mesh screen, U.S. Standard Sieve Series.
 - c) 90 ±2 percent of the sand and dust shall pass through a 200 mach screen, U.S. Standard Sieve Series.
 - d) 75 ±2 percent of the send and dust shall pass through a 325 mest serven, U.S. Standard Sieve Series.
 - e) Chemical analysis of the dust shall be as follows:

URSTANCE	PERCENT BY MELCHT
9102	97 to 39
F•2 ⁰ 3	0 to 2
A1203	9 to 1
T102	0 to 2
MgO	0 to 1
Ign Losses	0 to 2

The internal temperature of the test chamber shall be maintained at 25°C (77°F) for a period of 6 hours, with said and dust velocity through the test chamber between 100 to 500 feet per minute (2300 ±500 feet per minute if specified in the detail specification). After 6 hours at above conditions, the temperature shall be raised to and maintained at 71°C (160°F). These conditions shall be maintained for 6 hours. At the end of this test period, the equipment shall be removed and allowed to cool to room temperature and shall be operated and a record made of all date necessary to letermine compliance with the test specified in applicable paragraphs of 4.1.9.

- 4.0 EST COMPITIONS: (Continued)
- 4.7 EXPLOSION PROOF TOSTS Not applicable.
- 4.7.1 PRICEDURE Not applicable.
- 4.7.1.1 FACILITY Not applicable.
- 4.7.1.2 PENALING CURRITY & Not applicable.

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4.0 TEST FROCEDURES: (Continued)

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4.7.1.2 OPERATING CONDITIONS - Not applicable.

4.8 <u>NON-OPERATING SHICK AND VIRRATION TESTS</u> - Test specimens shall be subjected to the following shock and sinusoidal vibration tests as specified in the particular component specification, except where the test specimen size and weight make it impractical to do so. -

4.8.1 <u>THOCK TESTS</u> - Immediately following each of the : clowing test procedures, the test specimes shall be operated and a record made of all data necessary to determine compliance with the applicable paragraph of 4.1.9.

4.0 TEST PROCEURES: (Continued)

- 4.8.1.1 PROCEDURE I The test specimen, when not packaged for shipment, shall be subjected to a shock whose shock spectrum in both plus and minus directions is at least 100 G for each frequency from 100 to 700 cps. The shock shall be applied at least one along each of three mutually perpendicular axes. If the test specimen is wibration mounted on the missile, the shocks shall be applied with the vibration mounting removed.
- 4.8.1.2 PROCEDURE II The test specimen, packaged for unipment, shall be dropped to a flat concrete surface once in each direction along each of the three major mutually perpendicular axes except that the test specimen of over 1000 lbs. weight shall be dropped only in its normal mounting and transportation position. Height of drop shall depend on weight, as follows:

0 -	° 20	lbe.	42	inches
21 -	50	lbs.	36	inahee
51 -	250	1bs.	30	inches
250 -	500	1bs.	24	inches
Over	500	lbs.	12	inches

4.8.2 VIHATION TASTS -

2.8.2.1 PROCEDURE - Whenever a storage and shipment case is provided, it shall be included in the test setup. The test specimen shall be fastened securely on a suitable vibration machine in a position dynamically similar to the most severe position likely to be employed during shipment. Vibration tests shall be conducted under both resonant and cycling conditions as directed in Paragraphs 4.8.2.2 and 4.8.2.3. When practicable, the best specimen shall be tested functionally prior to and immediately following this test. At the end of the test period, the test specimen shall be inspected thoroughly for damage or defects resulting from the vibration test. The applied test conditions shall be as follows:

Printegraphy Nouble Amplitude or Vibratory Acceleration

5 ops to 27.5 ops 21.3 0 27.5 ops to 52 ops 0.036 inch 52 ops to 500 ops 25 G

When the test specimen incorporates cushioning materials likely to be appreciable influenced by extreme temperature conditions

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4.0

TEST COMDITIONS: (Continued)

4.8.2.1 PROCEDURE - (Continued)

(-65°F to +160°F) vibration temperature tests shall be conducted. The vibration test periods shall be equally divided into 3 periods one period for each of the following temperature range: high, low, and room ambient temperature.

- 4.8.2.2 RESONANCE - Resonant frequencies of the test specimen shall be determined by varying the frequency of applied vibration slowly through the 5 to 500 ops frequency range at double amplitudes or accelerations not exceeding those given above. This procedure shall be followed successively for vibration applied along each of three mutually perpendicular axes of the test specimen. Whenever practicable, covers shall be removed from the test specimen so that resonance may be determined. The specimen shall be vibrated for thirty minutes at each resonant mode encountered. This shall apply, in turn, for vibration applied along each of the three axes. When resonant frequencies within the specified frequency range are not apparent, the specimen shall be vibrated for one hour along each axis under the cycling conditions given below.
- 4.8.2.3 CXCLING - A frequency cycling test also shall be conducted in which the test frequency shall vary linearly from 10 cps to 500 cps and raturn to 10 cps in a 15 minute interval. Between 10 cps and 52 cps. the double amplitude applied shall be 0.036 inch and from 52 ops to 500 cps, the vibratory acceleration shall be 15 G. The test specimen shall be subjected to 3 cycling variations (45 minutes) along each exis of yibration.

- 4.0 TEST PROTEDINES: (Continued)
- Jested to the following test while operating. A record shall be to of all data necessary to determine compliance with the tests outlined in the applicable paragraph of 4.1.9.
- FIGURE The test specimen shall be subjected to a slow speed scanning eweep, at frequencies and amplitudes of sinusoidal vibration as shown in Figure 1, 2, or 3, as applicable, and a sweep period as shown in Figure 4, along each of any three mutually perpendicular axes of the test specimen. The resonant frequencies for each axis shall be determined by the following methods:
 - a) Increased accelerations measured on the test specimen with constant input accelerations, measured at the test specimen meanting points.
 - b) Excessive noise exitted from the equipment.
 - c) Frratic operation, or failure of the equipment.
- 4.10 <u>OFFRATING ACCELERATION TESTS</u> Missileborne equipment shall be subjected to the following tests while operating. A record shall be made of all data necessary to determine compliance with the tests outlined in the applicable paragraph of 4.1.9.
 - Step 1 The equipment shall be subjected to 10 :1 G for a period of at least 30 seconds along the axis corresponding to the air vehicle longitulinal axis, forward.
 - Step 2 The equipment shall be subjected to 2 G $_{-0}^{+10}$ percent, for a period of at least 15 seconds, along the axis corresponding to the air vehicle longitudisal axis, in a reverse direction.
 - Step 3 The equipment shall be subjected to 3 G +10 percent along each of two axes mutually perpendicular to each other and to the axis corresponding to the air vehicle longitudical axis, for a period of at least 15 seconds in each direction.

- 4.0 TEST AMOUNTS: (Continued)
- 4.11 IEMARK SHICK TENT The test specimen shall be subjected to the following temperature shock tests
- 4.11.1 PRICED RE - The test specimen shall be placed within the cramber atm the chamber maintained at a temperature of 70°F t5°F for a ceried of at least one hour, or until the test specimen temperature stabilizes. The test specimen shall then, within a period of 2 minutes, be placed in a charber whose temperature is at maximum non-operating temperature, or liner, whichever is greater, and winteled at this temperature for a period of one hour, or until the test specimen temperature stabilises, whichever is longer. The test specimen shall tren, within a period of 2 minutes, be placed in a charter whose temperature is minus 65°T, and meintained at this temperature until the test specimen temperature stabilises. The test specimen shall then be returned to room ambient conditions and examined for evidence of deterioration, and operated and a reserved made of all data necessary to determine compliance with the tests outlined in the applicable paragraph of 4.1.9.
- 4.12 Substitute Trat The summation test shall be substituted for Ster b of Paragraphs 4.2.1.1, 4.2.1.2, and 4.2.2 of this specification and shall be performed only as required in the test specimen procurement specification.
- 4.12.1 FRUCEDUME Met applicable.

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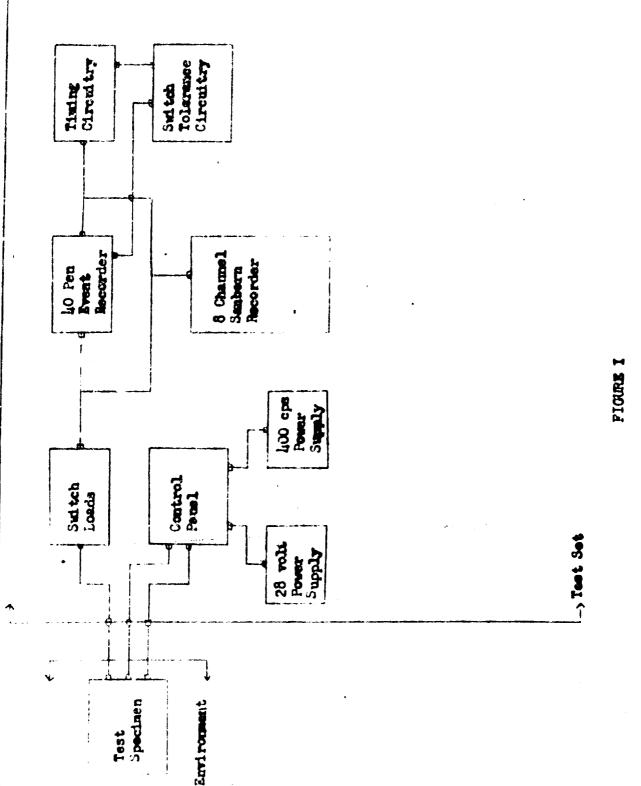
PASE 23

4.0 TEST PROCEDURES: (Continued)

4.13 RADIO INTERFEPENCE TESTS - Not applicable.

L. Li LIPE TESTS-

The test specimen shall be subjected to the following life Test. The test specimen shall operate for a total time of 300 hours. This shall consist of 3600 complete operating sequences of approximately 5 minutes per cycle. A proof cycle shall be performed at least once every 50 hours. The test specimen shall operate for the last 100 hours with no malfunction. In the event that a malfunction occurs during this period of 100 hours, the test specimen shall be operated for an additional 100 hour period with no malfunction occurring.



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INITIAL SATISFACTORY PERFORMANCE DATA SHERT

BPECIMEN S/N 4

This data sheat is to be used in conjunction with the operating cycle data wheat when performing the tests outlined in paragraph 5.1.8. Engineer 9t. X. Stung
Inspection Marsell
Air Force R.F. Howard

Pare. 4.1.8

TO THE HAY BE THE !

(b)

Purameter

Voltage at Pins J and A of U3J3

Tolerance

In phase max, and out of phase max. 7.5 1200 volts, s.c. voltage limits to be reached in 70 120 seconds.

Voltage 9.5 uslts
Time 65 sec.

(c) Arm-Safe Switch

Successful operation as indicated by indicator lights shall occur in 10 25 seconds.

Tim 8 sec.

-

OPERATING CYCLE DATA SHEETS

Paragraph 4.1.8

Specimen S/N 4

Engineer H. Z. Musa.
Inspection
Air Force R. M. Housed

Initial Satisfactory Performance Yest

4.1.9	OPERATINO CYCLE	7E3 T		in the second of		
(b)	Paremetur		Level	Time (sec)	Level	Time
	Input Voltages	1,00 cps	115 volte		115 mH	
		28 volta	27 volts	±2.7 volts	28 vally	
(c)	Launch Command (1	Ref:				
·	Switch #9		H-10	151.15	105 walte	15.00 m
j 1	and the same of	المنطقة التقامية المنطقة المنط	ro-HI	192.05	-6-5vette	19.0014
	Switch #10		H1-Lo	22.05	10.50015	2.00 pg.
			Lo-H1	152.05	-6.5 volte	15.00 :00
	Switch #11		Lo-Hi	21.05	/B7witz	204 606
1	•		Hi-Lo	191,1		MaCie.
-	والماعية منا فالماع من المنافظ المنافعة المنافعة المنافعة المنافعة المنافعة المنافعة المنافعة المنافعة المنافعة			05	ļ	
ì	Output of termina	als F and L	0.+0.2		0.0 valte	
	of 03J2		2,210,125	152,1	2.3 Tuelt	ISom.
1			1,7+0,125	27:.1		220,000
			1.920,125	392,1	195 water	
1			1.810,125	541.1		54.014.
			1.610.125	642.1		64.0 see
			1.120,125	74±.1		74.018
1			1.040.125	591.1		9.0 sec.
			0.780.125	1051.1	Luste	lesio me
			0,610,125	120: ,3		180.3 rec.
[_	and the second of the second o	-	0.0 St	. 0,110,1	0.00 sa Ng	T

Motor

Switches #1, 2, 3, 5, 5, 7, 9, 10

Switches #12, 13, 14, 15, 17, 18, 19

Switches #11

L)=8.013.0 volta
H1-12.512.5 volta
Lo-0 volta
H1-28 volta supply
+0 -4
Lo-18:0.9 volta
H1-96:0.15 volta

OPERAT NO CYCLE DATA SHEETS (CONTINUES)

Paragraph 4.1.8
Specimen 5/11 4

Engineer N. X. Mar.
Inspection Air Force R. F. Moward

Initiali Satis Factory Performance Test

4.1.9	OPERATING SYCLE TEST				
	Parameter	Level	Time (Sec) Level	Time
(d)	Staging Command (Ref.)			10.5 v. W.	
•	Switch #1	H-Io	0.11.05	-1.0 velb	
•	Syltch /2	ro-HT	0.11.05	-5.5 0 200	معال
	Switch #2	HI-LO	3.01.025	ie. selts	
		Lo-Hi	3.7±005		3.10 pec
	Switch #3	Lo-lii	0.11.05	-7.5 v o the	
	Salver 2)	Hi-Lo	6.71.05	71.0 4 6 25	
	Switch 14	Io-H	6.71.05	113	Gife the
	Switch #5	Lo-Hi	0.12.05	-SS up Ha	
	Saradu A3	H-I			1038
	Switch #6	and the second s		TAT UN HO	
		Lo-H	0,12,05	-far name	-49.384
	Switch	Hi-lo	5.0±.1		THE ME.
	Switch #12	Lo-Hi	0.11.05	The mile	-10th
	Switch /13	Lo-H1		36.500	1.10 mg
	Switch file	IO-FT	6413.0	28.5 wo Hz	tto me
(e)	Sustainer Cutoff Command (Re.	r)	•		
	Switch #3	Lo-Hi	Ox*Å	-7.5 wolf	0.00 Sec .
	Switch #5	Lo-H	0±•}	- F.S we 15	0.00 644
	Switch #13	Lo-H1	01. k	25.0 Hs	•
(r)	Vernier Cuteff Command (Ref)				
	Switch #16	îo-Hi	3.0±0.1	Z (. 0 + a 17)	3.00 pag. 1
	Switch 117	Lo-H		150.14	LCo to
	Switch /18	Lo-H1	5.0±0.1	25.0 J.H.	Sansas
	The state of the s				CORNEL.

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PAGE JO

OPERATING CYCLE DATA SHEETS

Paragraph 4.9.1

Specimen S/N 4

Inspection Air Force A. 7. A.

Proof Cycle after "Y" Axis vibration

Paremeter		Level	Time (sec)	ievel	Time
Input Voltage	1,00 cps	U relie	Company of a constitution of participation for a constitution of the constitution of t	LLELOW	
	28 voles	S, Ac/en	i?. volen	Plan 655	
Launch Commans Switch #9	I (Ref.	HT -{*O	15: 2	breeze	<u> </u>
		Levill	192.05	june	-
Switch #10		H1-La	22.05	س	3
		Lo-H	1,1.05	9	· ·
Switch #11		Lo-Hi	22,05	· ·	· ·
		H1-Lo	192,1	-	
Output of ten	inals F and L	0. •0.2			
of U3J2		2,210,125	152,1	Barra 1	<u> </u>
		1,7:0,125	27 t.1	home	مسر
		1.920.125	91,1	-	-
		1.810,125		- born	-
		1.640.125		- bear	
		1.3±0.125	741 1 591.		Jan.
		2,720,125	1051.1	مصيا	
		0,610,125	1202,1		Anno.
			•3.120.1	2.0	

Note

Switches #1, ?, 3, 1, 5, 6, 7, 9, 10

Switches #12, 13, 15, 16, 17, 18, 19

Switches #11

i.)v8.013.0 volts
di=12.522.5 valts
Lo=0 volts
iii=28 volts supply
+0 -4
Lo=1821.9 volts
ii=9420.45 volts

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PAGE	3/

Date 20 Oct. 59

OPERAT NG CYCLE DATA SHEETS (CONTINUED)

Paragraph	4.9.1		ate 20 Oct		
Specimen S		I A	nspection ir Force	Mara	AFO
Pro	oof Cycle nfter"Y"n	xie wibna	tion		
4.1.7	OPERATING CYCLY TEL				
	.'arameter	Level	Time (Sec)	Level	Time
(d)	. teging Command (Ref)	1		! س	
•	jwitch vi	<u> </u>	J.1:05	ا منا	
	Switch #2	Lo-lii	0.1+.05	<u>` سا</u>	
	Switch #2	Hi-Lo	3.0±.025		
		Lo-iii	3.7 2005	اا	1
	Switch #3	Lo-lii	0.12.05	اسا	مسا
		Hi-Lo	6.71.05		
	Switch #4	Lo-Hi	6.7±.05	<u>مر مو</u>	<u> </u>
	Jw. toh #5	Lo-Hi	0.1:.05	اسا	مسيا
•		H-L	10,0±1,0	<u></u>	
	Switch 16	Lo-H1	0.12.05	مس مسیا	-
	Switch 77	K1-L0	5.0±.1	ا سا سا	سا
	Syltoh 12	Lo-HL	0.1+.05	مسا	بمعمو
	Switch /13	Lo-Hi	3.118.025	امعا	1
	Switch #14	Lo-H1	64±3.0	<u></u>	
(•)	Sustainer Cutoff Command (Ref)	•		•
	Switch #3	Lo-iii	0±°d	اسسا	
	Switch #5	Lo-HL	0±•}	`\ ^	
	Switch #19	Lo-H1	0±•\$5	r	
(1)	Vernier Cutoff Command (Re	r)		•	
\- /	Switch #16	Lo-Hi	3.020.1	<u> </u>	•
	Switch /17	IO-HI	4.010.1		
	Switch /18	Lo-H1	5.010.1	1	
				سيألبين ببيسيس كالمتجومين	

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OPERATING CYCLE DATA SHEETS

Paragraph 4.9./
Specimen S/N 4

Date 10 Oct. 59
Engineer 2, 2 2
Inspection 46 call
Air Porce 18: E. Noward

Proof Cycle After Zaxis vibration

01	OPERAT NO CYCLE TEST						
Ps	remerer		Level	Time (sec)	Level	Time	
Ir	put Voltages	600 cps	115 volte		1150014		
	harr ble rillean / en la sella et Address address de en en en en	28 volta	27 volts	22. volts	279 vot		
Le	unch Command (F	(af					
Switch #9		11-10	151.35				
	والوالم والمراجع والمعارات المسارات المارات المسارات	the control of the co	Lo-Hi	192.05	~	سا	
	Switch #10		H1-10	22,05	سا	سا	
	e de la composição de l		Lo-i:1	132.05	<u></u>	-	
	Switch #11		Lo-ili	21.05	W	سا	
			H1-10	19±.1			
				05			
Ou	tput of termina	ls F and L	0. •0.2		<u></u>		
of	1315		2.2±0.125	152,1	-	-	
			1.7:0.125	271.1		<u></u>	
			1,9±0,125	39±,1			
			1.320,125	542.1	[سما	سا	
			1.610.125	6/12.1		-	
			1.320.125	742.1	اسا		
			1.020.125	39:1			
			2,7±2,125	1051.1		TRKKKKKK	
			0.620.125 0.0 Stg	1202,1			
		·	308	- / 6 4 4 (/ 6 1	اسا	مسسا	

Note

Switches #1, 2, 3, %, 5, 6, 7, 9, 10

Switches #17, 13, 14, 14, 17, 18, 19

Switches #11

LD+8.0±3.7 volts
Hi=12.5±2.5 volts
Lo=0 volts
Hi=28 volts supply
+0 -4
Lo=18±2.9 volts
Hi=94±0.45 volts

Pitch signal went out of tolerance at approximately 250 cps.

Elapsed Time 25 hrs.

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OPERATING CYCLE DATA SHEETS (CONTINUES)

Paragraph 4.9.1
Specimen S/N 4

Date 20 Oct. 59
Engineer 74. 7. 20
Inspection officered
Air Force R. F. Abunga

Proof Cycle After Z Axis vibration

	OPERATING SYCL. TES.					
	Parameter	Level	Time (Sec) Level	Tim	
	saging Command (Ref)					
	Switch #1	HI-LO	0.12.05		سسا	
	Switch #2	Lo-id	0.14.05	-	سا	
	Switch #2	H1-10	3.C±.025			
	والمراجعة	Lo-il1	3.7:035	سا	<u> </u>	
	, Switch #3	Lo-iti	0.11.05	-	سا	
		HI-LO	6.71.05			
	Switch /4	La-Hi	6.71.05	J- J-		
	Switch #5	Lo-Hi	0.11.05		1	
		H-IA	10,011,0		-	
	Svitch #6	Lo-Hi	0.11.05	اسزسا		
	Satch [7]	H1-Lo	5.0±.1			
	Switch /12	Lo-H	0,11,05			
•	Switch /13	Lo-Hi	3.128.025	<u> </u>		
	Seitch file	Lo-Hi	6fr3°0	<u> </u>		
	Sustainer Cutoff Command (Ref)					
	Switch #3	Lo-Hi	0±°0	اسا	!	
	Switch #5	Lo-Hi	O±•			
	Switch #19	lo-Hi	04.82	~		
1	Vermier Cutoff Command (Re	r)				
			2 004 9	1		
	Switch 16	LO-H1	Ja ULU a L			
	Switch 16 Switch 17	Lo-H1	3.020.1			

Pitch signal went out of telerance at approximately 250 cps.

Elassod Time 25 hr.

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INTITIAL ATTOLANT Y OF RYORMANCE DATA SHEET

SPECIMEN S/9 4

This data anset is to be used in the junction with the operation systematic state and sheet when performing the tests out-lined in paragraph 1.1.9.

Inspection | R.F. Howard

Para.

(b)

Parameter

Voltage at Pins J and A of U3J3

Tolerance

In phase max, and out of phase nax, 7.5 ±2.2 volts, nax, voltage . limite to be reached in 70 ±20 secunds.

Tire 65 sec.

(c) Arm-Safe Switch

Successful operation as indicated by indicator lights shall occur in 10 25 seconds.

Tim 8 sec.

Elapsed Time 26hrs.

SPERATING CYCLE DATA SHEETS

Paragraph 4.1.8

Specimen S/N 4

Date 26 Oct. 59 Engineer 24.4 Inapection Air Porce N. E. HOLVARD

PAGI

Initial Satisfictory Performance Test

4.1.9	OPERATING CYCLE T	TST				
(b)	Parameter		Level	Time (sec	1! Level	Time
	Input Voltages	1,00 cps	115 volte	etuaristikaan oo ye dagaanii sudhaan uusu uusu uusuusu	115 up H	1
		28 volts	27 volts	22.7 volt	3 280011	
(c)	Laurich Command (R	ef;				
į	Switch #9		H1-10	152,35	1100 42	/500 19E
			Lo-H1	192.05	· 7	/200 jec
*	Switch #10		H1-Lo	22.35		2.00 sec
-	en e		Lo-H1	132.05	7	15.00 sec
	Switch #11		Lo-Hi	21.05		2.00 sec
1			KI-Lo	191,1	99.00 well	19.05 536
-	The second section of the second section is a second section of the second section of the second section is an examination of the second section of the second section is a second section of the sec			- 05		
!	Output of terminal	s F and L	0.+0.2		Oo well	
	of U3J2		2.2:0,125	15:1	2.24 0916	
1	, , , , , , , , , , , , , , , , , , , ,		1,7:0,125	271.1	le?y welt	27.0 (00
			1,910,125	391,1	1.97 -	110
			1,810,125	54±.1	1.84 work	54.0 100
			1.611.125	64.1.1	1.63 2.24	64.0 ser
į			1.110.125	742,1	1.32 max	74.0 196.
			1.010.125	32:1	1/100 my	220.00
}			2,7±0.125	1051.1	Keneda	1050xx
į			0,620,125	120: 1		180.038
<u></u>	and the second s	ar was a range and another a	0.0 Str	+0.120.1	0.0 0.145	

Notes

Switches #1, 0, 3, 1, 4, 4, 7, 0, 10

Switche: #12, 13, 15, 10, 10, 13, 19

Switches #11

L)+9.013.0 volte K-12.522 5 volts Lo-C volte E1-28 volts supply ... C+ Lo-18:). 9 volts di-Madain volte

Elopsed Time 26 hrs.

REPORT 7A 2 3 4 8 2 2

OPERATING CYCLE DATA SHEETS (CONTINUED)

Paragraph 4, 1, 8
Specimen S/N 4

CONT. ATAIT

Raginser 7/ X August 1 Air Force R. F. Howard

Initial Satisfactory Performance Test

OPERATINO CYCLE TEST					
Parameter	Level	Time (Sec	e) Level	fim	
Staging Command (Ref)	,		18 Tuok		
				0.10 300	
•			the second second		
Switch W2			T		
1	Lo-91	3.7400	-7.0 units	3.70 Fec.	
cail an	9 111				
SAUTCHU &2					
-			11 Exofts	4.70 toc.	
Switch #5					
0.2 1.1 17			- 4.4		
	Name and Address of the Owner, where the Party of the Owner, where the Owner, where the Owner, where the Owner,		His rele	0.10 sec.	
	منطقه والمستوان والمستوان والمستوان والمستوان والمستوان	5.0±.1	- Levele	BB6 sec.	
		O_1±,05	25.5 H	0.10 100.	
	Lo-iii	3.118.025	255 UNG	3.10 sec.	
Switch #14	Lo-Hi	6h±3.0	255 un74	64.0 sec.	
Sustainer Cutoff Command (Ref)	_	Bester die	• •	
Switch #3	Lo-Hi	0±°Å	-7.0 wolfs	0.0 sec	
Switch #5	Lo-Hi	0±•}	- LO UO 773	QO SOL	
Switch #19	Io-Hi	07.82	25.0 wo Hz		
Vernier Cutoff Command (Re	ι τ)				
		3.0±0.1	250 mHa	3.0 180 :	
Svitch #17		4.0:0.1	750 -14	4.0 sec	
Switch #18	Lo-Ki	5.0±0.1			
	Parameter Staging Command (Ref) Switch #1 Switch #2 Switch #2 Switch #3 Switch #5 Switch #6 Switch #12 Switch #13 Switch #14 Sustainer Cutoff Command (Reswitch #19) Vermier Cutoff Command (Reswitch #16 Switch #17	Parameter Level Staging Command (Ref) Switch #2 Switch #2 Lo-Hi Switch #2 Lo-Hi Switch #3 Lo-Hi Switch #5 Lo-Hi Switch #6 Switch #6 Switch #12 Switch #13 Switch #13 Switch #13 Switch #13 Lo-Hi Switch #13 Switch #13 Switch #13 Switch #13 Lo-Hi Switch #3 Switch #13 Lo-Hi Switch #13 Switch #13 Lo-Hi Switch #13 Lo-Hi Switch #13 Lo-Hi Switch #19 Vernier Cutoff Command (Ref) Switch #19 Vernier Cutoff Command (Ref) Switch #19 Vernier Cutoff Command (Ref) Switch #19	Tarameter Level Time (Secondard Command (Ref) Switch #1 Switch #2 Lo-Hi	Parameter Level Time (Sec Level	

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OPERATING CYCLE DATA SHEETS

Paragraph 4.9./

Specimen S/N 4

Engineer 2. X. Mana Inspection Manager Air Porce Recover

Proof Cycle After Z mais cobration

Parqueter		Level	Time (sec)	Level	Time	
Input Voltages 400 cps 28 volta	115 volta		115 0011			
	27 volts	22.7 volts				
Launch	Command (Ref)				·
	ch #9		H1-L0	152.05	-	
			Lo-Hi	192.05	<u> </u>	سسان
Sed t	ch #10		Hi-Lo	21,05	<u></u>	<u></u>
	Lo-Hi	152.05	سا	سسا		
Switch #11	Lo-Hi	21,05	سا	مسبنا		
~~~			Hi-Lo	19:1	سيا	سا
				-,05		
Out nut	Output of terminals F and L	0.+0.2		<u>                                   </u>		
of UJJ2			2.2:0.125	15±.1	<u></u>	~
01 0,00	•		1,7+0,125	272,1		V
			1,910,125	39:1	<b>"</b>	<b>Y</b>
			1,849,125	54±,1	1	سا
			1.640.125	64.1	1	<u> </u>
			.1,320,125	74±,1	سا	سسا
			1,040,125	891.1	7	
			0.710.125	105±,1		
			0,610,125	1201.1		مسسا
			0.0 St	g +0.1±0.1	<u>ا</u>	-

### Note:

Switches #1, 2, 3, 4, 5, 6, 7, 9, 10

Switches \$12, 13, 14, 16, 17, 18, 19

Switches #11

10.00.013.0 volts
Hi=12.512.5 volts
Lo=0 volts
Hi=28 volts supply
+0.4
Lo=1820.9 volts
Hi=9410.45 volts

Elmpson Time 21 hrs.

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MMI. JO.

#### OPERATING CYCLE DATA SHEETS (CONTINUED)

Paragraph 4.9./			Date 76 Oct. 59		
Specimen	s/n <u>4</u>		Engineer %.2. Inspection Air Force	e a company	Z
Proof	Cycle After Z mxis	uibration.	* · · · · · · · · · · · · · · · · · · ·		
4.1.9	OPERATING CYCL TEL:				
	Parameter	Level	Time (Sec)	Level	Time
(d)	Staging Command (Ref)	•		•	!
•	Switch #1	H1-Lo	0.1±.05		٠ سا
-	Switch 2	Lo-ili	0.1+.05	سر	-
	Switch #2	Hi-Lo	3.01.025	سز	
	;	Lo-ili	3.7:005	<u>ا</u>	سا
	Switch #3	Lo-!ii	) 3 A 200 j	,	1
		H1-Lo	<u> </u>		
	Switch #4	Lo-Hi	6.7±.05 6.7±.05		
	Switch #5	ro-Hr	0.1±.05	ee-	
		HI-14	Tax manager	<u> </u>	
	Switch 16	ro-Hr	10,0±1,0		_ <u></u>
	Switch #7		0,11,05	ا سا سا	<u> </u>
	Switch #12	H1-10	5.0±.1	ميا سا	أسيا
	Switch /13	Lo-li	0,1±,05 3.1±9.025	ا مسا	<u> </u>
		<del></del>		<u> </u>	ا_
	Switch /li	Lo-iii	64±3.0	<u></u>	<u></u>
(a)	Sustainer Cutoff Command	(Ref)		•	:
,	Switch #3	Lo-lii	၁ <del>≭</del> ∙ပှ	أصر	
	Switch #5	Lo-itl	0±• Å		<u> </u>
	A CONTRACTOR OF THE PARTY OF TH			اسيا	
	Switch #19	lo-Hi	02.82	<u></u>	<u> </u>
(f)·	Vernier Cutoff Command (Re	of)			
	Switch #16	Lo-Hi	3.0±0.1	أسا	<b>س</b> ا
	Switch /17	Lo-H	L-0±0.1	+	
	Switch /18	Lo-!!1	5.0±0.1	ا سا	
			· · · · · · · · · · · · · · · · · · ·		

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#### OPERATING CYCLE DATA SHEETS

Paragraph	4.9.1
-----------	-------

Date 26 Oct. 59

Specimen S/N 4

Engineer 71.7. Tues

Inspection

Proof Cycle After Y Axis vibration AT Force RAHAMARD

### 4.1.9 OPERATING CYCLE TEST

Parameter	Level	Time (sec)	Level	Time
Input Voltages 400 cps	115 volta		115 walt	
28 volts		±2.7 volta	28 walte	
Launch Command (Ref.)	· Ri-Jo	154.05		1-
Switch #9	Io-HI	194.03		— <del>-</del>
0.44.5 #30	Hi-Lo	24.05	سا	
nput Voltages 400 cps 28 volts  aunch Command (Ref.)  Switch #9  Switch #10  Switch #11  utput of terminals F and L	Io-H1	154.05	ما	1
	Lo-Hi	24,05	سن	سا
Switch #11	HI-Lo	194.1	1	-
		05	<del>-}</del>	
Output of terminals F and L	0,+0,2		سا	
of U3J2	2,240,125	15±.1		1
	1,7±0,125	27±.1	10	1
	1.940.125	394.1	<u> </u>	
	1.8-0.125	54.1	11	
	1.640.125	640.1	1	
	1.3-0.125	744,1	14	
	1,0-0,123	894	+-	
	0.740.125	1204.1	1-12	
		g +0.1±0.1	1	-

Notes

(b)

Switches #1, 2, 3, 4, 5, 6, 7, 9, 10

Switches #12, 13, 14, 16, 17, 18, 19

Switches #11

IO-8.0=3.0 volts
Hi=12.5=2.5 volts
IO-0 volts
Hi=28 volts supply
+0 -4
IO-18=0.9 volts
Hi=94=0.45 volts

ElassaleTime 28 hrs.

### OPERAT NO CYCLE DATA SHEETS (CONTINUES)

Paragroph Specimen		1	Engineer 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2,				
Proof	Cycle After Y Ax						
4.1.9	OPERATINO CYCLE TEST						
	Parameter	Lovel	Time ,Sec	) Level	Time		
(d)	Staging Command (Ref)	Hi-Lo	0.12.05	<u></u>			
•	Sv1 sch /2	Io-Hi	J.11.05	-			
	Switch #2	HZ-10	3.02.025				
/		Lo-i(1	3.7:05	<b>—</b>	سا		
	Switch #3	Lo-Hi	12.05	سا	_مسا		
1	College of the colleg	HT-10	<u>5.72.05</u>	نمدسيمل.			
/	Switch #4 Switch #5	<u> </u>	6.71.05	. Jr. 1			
/	Dar scu &>	Lo-Hi HI-Lo	0,1:,05				
/	3 kd Ech #5	Lo-HI	0.12.05		<u> </u>		
1	Switch #7	111-10	5,32,1	. K. K	ليسا		
/	Switch #12	Lo-HL	0,11,05	حصل سل			
/	Switch 13	Lo-Ri	- 5.1.0.025				
/	Switch /L	Le-Hi	61.13.0	. سا	_ما		
<b>(•)</b>	Sustainer Cutoff Command Switch #3	(Ref)	<b>∋</b> ±*δ		_		
	AND AND THE PROPERTY AND ADDRESS OF THE PARTY ADDRESS			- <u> </u>			
	Switch #5	Lo-H	Ct.				
	Switch #19	I.a-K1	O±•₽	<b>L</b> .	ب		
(f)	Vernier Cutoff Command (			•			
	Switch /16	io-H1	3.010.1	. سر			
	Switch 117 Switch 118	Io-H	- Fr 030 cf		1		
	CHARGI FAG	Lo-Hi	5.010.1	. ميز			

Elapsod The 28 hr.

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#### OPERATING CYCLE DATA SHKETS

Specime	Cycle After X Axis U	Engi	27/Oct.  neer 7.X.  ction for	Qua.	- - - -
(b)	Parameter	Level	Time (sec)	Level	Time
		115 volts 27 volts	±2.7 volts	115 we H	
	Launch Command (Ref.) Switch #9	Hi-Lo Lo-Hi	15*.05 19*.05	<u>اسا</u>	<u>ا</u>
	Switch #10	Hi-lo lo-Hi	2*.05 15*.03	<u> </u>	1
	Switch #11	Lo-Hi Hi-Lo	2±,05 199,1 05		1
	Output of terminals F and L of U3J2	0,+0,2 2,2*0,125 1,7*0,125 1,9*0,125 1,8*0,125 1,6*0,125 1,0*0,125 0,7*0,125	15±.1 27±.1 39±.1 54±.1 64±.1 74±.1 89±.1 105±.1	KKKKKKK	FINTER
		0.640.125	1204.1 g +0.140.1	1	1

Notes

Switches #i, 2, 3, 4, 5, 6, 7, 9, 10

Switches #12, 13, 14, 16, 17, 18, 19

Switches #11

LO-8.003.0 volts
H1-12.502.5 volts
Lo-0 volts
H1-28 volts supply
+0 -4
Lo-1800.9 volts
H1-9400.45 volts

* Sw#19 failed at approximately 100 cps.

Elapsed Time 30 hrs.

ASTRONAUTICS

### OPERAT NO CYCLE DATA SHEETS (CONTINUES)

Specimen S/N 4

# Proof Cycle After X Axis vibration

1.1.9	operation cycle that				
	:'aramuter	Lovel	Time (Sec	c) Level	Time
(d)	taging Command (Ref)	,			; ;
	Switch #1	H-la	0.11.05		سسا :
	Sv1 toh #2	Lo-Hi,	0,11,05		مسما
	Switch 12	HIND	3.01.025		
	j. Dans – skuuree teksk <b>ij</b> sinkke op kom wy cankaalakke dy mikkaalakkeskestikuskek sin op dis	Lo-its	3.7:05	ا مسا	ما
	Switch #3	Lo-Hi	0,11,05	•	
		HI-LO	6.72.05	+	
	Switch /	10-11	6.71.05	ساما	
	3vitch 15	Le-RI.	0.11.05		
	•	RI-LA	10,011.0		
	Jid Cen 18	L-10	0.1:.05		
	Switch 77	Hi-Lo	3,02,1	un Ernettad	
	Switch 12	Lo-ft	0,11,05	Firms	
	Switch /13	LO-FI1	3.129.025	. مسا	مبيا
	Switch Ill	10-H	Ø13.0		
(a) (a)	Sustainer Cutoff Command (	Ref)			
	Switch #3	La-Ht	⊃ <b>≭ • છે</b>	-	مسسا
	Switch #5	Lo-HI	01.7		
	Switch #19	Lo-Hi	01.2	0.0 0.04	*
(r)	Verniar Cutoff Command (Re	<b>e</b> 1			
<b>4</b> - r	Switch flo	Lo-H1	3,020,1	1	
	Switch 117	Lo-d	1.010.1		
	Svitch 18	Lo-Hi	5.010.1	and the same	
			The second secon	<b></b>	

* Sw. 19 failed At Approximately 100 cps.

Elapped Time 30 hrs.

#### INITIAL SATISFACTORY PERFORMANCE DATA SHEET

SPECIMEN S/N 4

This data sheet is to be used in conjunction with the operating cycle data sheet when performing the tests outlined in persgraph held. Engineer 7.7. Dura
Inspection Market
Air Force Reviews

Para, 4.1.0 (b)

Paraneter

Voltage at Pine J and A of U3J3

Tolerance

In phase max, and out of phase max. 7.5 1200 wolts, max. voltage limits to be reached in 70 229 seconds.

Voltage 9.5 welts
Time 65 sec.

(c) Arm-Safe Switch

Successful operation as indicates by indicator lights shall occurrin 10 25 seconds.

tim 8 sec.

Elapand Time 40 hrs.

NOTON ....

#### OPERATING CYCLE DATA SHEETS

Specimen 5/h 4 Engineer 71.2. Susan

Inspection Structure Performance Test

Air Force REctange

4.1.9 JIERATING CYCLE TEST

<b>4) 4                                  </b>	And				
(b)	Parameter	level	Time (sec)	level	Time
	Input Voltages 400 ope	115 volta		115 un He	
	28 volts.	27 volts	*2.7 volts	1	,
	Launch Command (Ref.)	Hi-Lo	154,05	// Con He	1500-
	Switch #9	IA-OI	194.03		
	Switch #10	H1-Io	24.05	115 welds  77.8 welds  11.0 welds 15.00 sec.  15.0 welds 17.00 sec.  18.6 welds 15.00 sec.  18.6 welds 15.00 sec.  18.6 welds 15.00 sec.  17.5 welds 15.0 sec.  17.5 welds 15.0 sec.  17.5 welds 15.0 sec.  17.6 welds 17.0 sec.  18.6 welds 17.0 sec.  18.6 welds 17.0 sec.  18.6 welds 17.0 sec.  18.6 welds 17.0 sec.	
	Date of Ato	Lo-H1	15=,05	-650014	15.00 se
1	Switch #11	Lo-H1	24,05		
!		Hi-Lo	194.1	94.00>	13-06 sec
-	Output of terminals F and L	0,+0,2	· · · · · · · · · · · · · · · · · · ·	20.00	
1	of U3J2	2.240,125	15±.1		
1		1,7=0,125	27:.1		
		1.940.125	394.1		
!		1.840,125	544.1		
		1.640.125	640.1		
1		1.300,125	744,1		
:		1,0-0,125	854.)	LCO and	220 25.
1		0.7-0.125	1050.1	17C nett	6050 m
1		0.6.0.125	1204.1	, 60 es X	visao sai
		0.0 St	g +0.1±0.1	0.000145	St. I see

Notor

Switches #1, 2, 3, 4, 5, 6, 7, 9, 10 Switches #12, 13, 14, 16, 17, 18, 19 Switches #11 10-8.043.0 volts
Hi-12.542.5 volts
Lo-0 volts
Hi-28 volts supply
+0 -4
Lo-1840.9 volts
Hi-9440.45 volts

Elapsed Time 40 hrs.

#### OPERA? NO CYCLE DATA SHEETS (CONTINUED)

Paregraph 4.1.8 Specimen S/N 4 Date 3/Oct. 59
Engines: 54. 3 Suna
Imagection
Air Perse 25. August

		^	TE TO THE STEEL ST	
Initial S	Satisfactory Performance	Tost		
ii.1.9	OPERATING CYCLE THE T			
	er keeter	Level	Time (Sec) Level Time	<b>N</b> E
(d)	staging Command (Ref)	M-Io	0.12.05 -LSuattoppe	
-	Switch #2	Lo-Hi	0,12,05 -60 wite 010;	
	Switch 12	H-10	3.02.025 11.5 walts 200 s	les.
	† Na reconstruction of the second contraction of the second contractio	IO-HI	3.7±005 -60 with 2101	
	Switch #3	Lo-HI HI-LO	0.12.05 -7.7 watts 0.16 at 6.72.05 16.5 volts 6.70.5	<u>*</u>
	Switch #4	Lo-M	6.72.05	135.
	3vitch 15	Lo-Hi	0.11.05 -40 0014 0 10:	
		H-LA	10,021,0 11.0 0049/0.00	IES.
	Swetch 76	Lo-H	0 3 a 00 -6-5 wells	
	Switch M	HI-Le	5.02.1 10 mes 10/0	M.C.
	Switch /12	10-11	0.12,05 255 well 010 H	55.:.
	Seried All	Lo-Hi	3.128.025 255 water 0/0 as	<u>a.</u>
	Switch #14	Lo-Ki	6423.0 255 why 6700 :	
<b>(•)</b>	Sustainer Cutoff Command (R	ef)	•	
	Switch #3	Lo-RI	stoom Hunos	cc.
	Switch #5	Lo-HL	Oto Chambiacos	~ ·
	Switch #19	IA-HI	02 P 1255 00 H 0.00 6	
(f)	Vermier Cutoff Command (Ref	)		<b>=</b> =
	Switch [16	in-Hi	3.020.1 250 v. Hz. 200 s.	<b>.</b>
	Switch 127	LO-H	_ Ma 020 at _ 750 yes to 4.00 se	r f
	Switch 118	Lo-:11	5.020.1 750 Hy 5.00 11	

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#### OPERATING CYCLE DATA SHEETS

Farage	_{s.th} <u>4.9.1</u>		31 Oct. 3		
	an S/N 4	Engi	1000r <u>A. L.</u>	Guera	
	Cycle after X axis vibra	Insp ion Air	Force REM	MARO_	-
4.1.9	OPERATING CYCLE TEST				
(a)	Parazeter	Level	Tize (eso)	Level	Time
	Input Voltages 400 ope 28 volts	115 volts 27 volts	±2.7 volts	115 mal	, , , , , ,
	Launch Command (Ref.) Switch #9	Hi-lo Ic-Hi	154.05 194.05	<u></u>	7
	Switch #10	Ki-lo Lo-Hi	2±.05 15±.05		<u></u>
and the state of t	Switch #11	Lo-Hi Hi-Lo	24,05 199,1 05		<u> </u>
	Output of terminals F and L of U3J2	0,+0,2 2,2+0,125	150.2	E	Y
		1,7±0,125 1,4±0,125	37¢.1	15	
		1.8±0.125 1.6±0.125	544.1 644.1		1
		1.3=0.125 1.0=0.125 0.7=0.25	744,1 894,1 1054,1		
in the second se		0.640.125	120a,1 g +0,1a0,1		1

Note:

Switches #1, 2, 3, 4, 5, 6, 7, 9, 10

Switches #12; 13, 14, 16, 17, 18, 19

Switches #11

Elapsed Time 41 krs.

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# OPERAT NO CYCLE DATA SHEE.S (CONTINUES)

Spacin	en 5/N 4:		Date 3/ Oct Engineer 3/ Inspection Air Ferce 6	Y. Xing	
Proof	Cycle After X	Axis vibration			
4.1.9	OPERATING CYCLE	7151			,
	Parameter	Lovel	Time (Sec	) Level	Time
(a)	taging Command	(Ref)	0.11.05	,	
•	Switch #2	Lo-Hi	0.12.05		
	Switch #2	H-L0	3.02.025		
		Lo-ili	3.7±005		
	and a second	and the specific control of the state of the specific control of the state of the specific control of		، سیسا	
	switch #3	Io-H	0.11.05	<u></u>	<u></u>
	Switch /4	#1-10	<u> </u>		-be-
	Switch #5		6-71-05	- ber ber	
	Serech 15	I.a-Hi. HiLa	0,1±.05		۔ میبا۔۔
	Switch 76	Lo-H	10.011.0		_ <u></u>
	Switch 77	招-19	5.01.1		
	Switch /12	10-18	0.11.05	به العمل مل. معالم	<u> </u>
	switch all	Le-Ei	3.128.825		_ <u></u>
	Switch II	Ia-Ki	64:3.0		
	247 A013 E III	A refer process on a resignative flat after the contractive fraction of the contractive flat and the contractive flat after the contrac	0012010		<u> </u>
(.)	Systainer Cutofi Switch #3	Command (Ref)	ာ∗ ဂ်		
	Switch 15	مستهدين والأراج والمتال والمال والمتال والمتالية	the same of the sa		
	to the process of the state of	Le-HI	O±•}		-
	Switch #19	I.e-Hi	01.95	· been	
(f)	Vernier Cutoff C			2	
	vitch /17	Lo-til	3.020.3	- 1	مسي
	witch /10	io-it Lo-ti	La OzOaži		<b>January</b>
	The second secon	The second secon	5.0±0.1	، مسبل.	Zuner.

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PALL AB.

#### CHERATING CYCLE DATA SHEETS

Specimen S/N 4		Date Z Nov. 59				
		Engineer 7.7. Jusa				
Proo	f Cycle After Acceleration	Ins Air	Force REH	waso	_	
4.1.9	UPERATING CYCLE TEST					
(a)	Parameter	Level	Time (pec)	Level	Time	
	input Voltages 400 aps	115 volta		115 walt		
	28 volts	27 volts	±2.7 volte	18 us H		
	Launch Command (Ref.)	Hi-Lo	154.05	سا ا	<u>س</u> ا	
	Switch #9	II-oI	19=.05	1	سا	
	Switch #10	H1-Io	24.05	سر	_سا	
1	011 Gg	Lo-H1	15+.05	<u> </u>	اسا	
	Culton #11	Lo-Hi	24,05	<u></u>	سا	
i	Switch #11	H1-10	194.1	<u> </u>		
	Output of terminals F and L	0.+0.2		سر		
	of U3J2	2.3.0.125	154.1	1		
	• •	1.7-0.125	274.1	<del> </del>		
		1.8±0.125	396.1 544.1	1		
	1	1.6-0.123	64.I	+		
		1.3-0.125	740.1			
		1.0-0.125	894.1	1		
	1	0,740,125	105-1	1	-	
	, 1 1	0.6=0.125 0.0 St	1204.1 ig +0.1±0.1	+-		
				1		

Noter

Switches #1, 2, 3, 4, 5, 6, 7, 9, 10

Switches #12, 13, 14, 16, 17, 18, 19

Switches #11

10-8.043.0 volts
Hi-12.542.5 volts
Lo-0 volts
Hi-28 volts supply
+0 -4
Lo-1840.9 volts
H1-9440.45 volts

Elopsed Time 43 hrs.

## ÓPERAT NO CYCLE DATA SHEETS (CONTINUES)

Specimen 5/N 4			Date 2 Nov. 59 Engineer - H. J. Share Inspection   Disease   Air Force   R. F. chowsen.			
Proof	Cycle After Accelera	ation				
4.1.9	OPERATING CYCLE TEST					
	Parkastor	Lovel	Time (Sec	) Level	Time	
(4)	taging Command (Ref)	• ,		f		
•	Switch ()	H-io	0.12.05	100		
		io-H	0.12.05			
	Switch #2	H-le	3.02.025			
		Lo-HI	3.7:005	أ. رسيا		
	Switch #3	Lo-H	0.12.05			
	La contraction de la contracti	H7-10	9.72.05		أسميا	
	Switch /	io-Xi	6.72.05	_		
	Switch #5	Le-Hi	0.12.05			
	Sud teh 16	用-14	10,011,0	<del></del>	_ 上	
	Switch #7	Lo-M	0.1:.05	EX		
	Switch #12	Hi-lo	5,0:,1	بهيينا رسما		
	Switch /13	Lo-FL	0.11.05			
			<del> </del>	<u> </u>		
	Seitoh 114	Le-HL	643.0	<u></u>		
<b>(•)</b>	Sustainer Cutoff Command (S Switch #3	lef) Lo <del>-i</del> li	0x*0	:		
	Switch 15	Lo-HL	01.4			
	the same of the sa					
	Switch #19	Io-Hi	O4.6	اسد	-	
(r)	Vernier Cutoff ** comend (Ref. Switch #16	') [0-H1	2 000 3			
	Jwitch /17	Lo-Hi	3.0±0.1 4.0±0.1	٠ المستويد،		
	Switch /10	Le-H1	5.010.1			
	The second of the second secon		70000			

PARE 50

#### UPERATING CYCLE DATA SHRETS

Specime	on 5/N 4.9.1  on S/N 4  on	Engi Insp	neer H. X. section A. A. Force REA	Gussel	<u></u>
(6,	Parameter	ievel	Time (sec)	Lovel	Time
	Input Voltages <u>400 apa</u> 28 volta	115 volta 27 volta	.≠2.7 volts	115 mHz	
Paragraph Paragray	Launch Command (Ref.) Switch #9	Hi-lo Lo-Hi	15±.05 19±.05	<u> </u>	Lee-
	Switch #10	H1-lo Lo-H1	2±.05 15±.05	<u> </u>	<u> </u>
	Switch #11	lo-Hi Hi-Lo	2*,05 199,1 05	سار ا	<u> </u>
	Output of terminals P and L of U312	0,+0,2 2,2*0,125 1,7*0,125 1,9*0,125 1,8*0,125 1,6*0,125 1,0*0,125 0,7*0,125 0,6*0,125	154.1 274.1 394.1 544.1 644.1 744.1 894.1 1054.1	KKKKKKK	C R R R R R R R R

0.0

#### Notes

Switches #1, 2, 3, 4, 5, 6, 7, 9, 10

Switches #12, 13, 14, 16, 17, 18, 19

Switches #11

10-8.0a3.0 volts
Ri-12.5a2.5 volts
Lo-0 volts
Hi-28 volts supply
+0 -4
Lo-18=0.9 volts
Hi-94=0.45 volts

Stg +0.1.0.1

Elapsed Time 44 hos.

#### OPERAT NO CYCLE DATA SHRETS (CONTINUES)

Specimen S/N 4.

Engineer H. J. Sugar Inspection (R.E. Manage)
Air Perce (R.E. Manage)

Proof Cycle After Z Axis vibration

	e -			
OPERATING CYCLE TEST				
Parameter	Level	Time (Sec	) Level	Mae
staging Command (Ref)			,	
	H-Ia	0.11.05	مسط مسل	
Switch #2	Lo-HI	0.12.05	4	هسيا
Switch #2	H-10	3.02.025		Le-
	Lo-H1	3.7±6 ⁰⁵	<u></u>	_بيل_
Switch #3	Lo-Hi	0.14.05		ق <b>سا</b>
5-1061 47				
Switch du			In le	
			-	مسا
			I 1	
Swd teh 16	10-H		ا سا سا	سسا
Switch Pi	181			نـــــــــــــــــــــــــــــــــــ
Switch 112	10-HL	6.11.05	-	
3witch [13	Lo-Sti	3.128.025	سيا	سيا
Switch File	Lo-El	64.23.0	سياً.	<u> </u>
Sustainer Cutoff Command (	(Ref)	•		•
Switch #3	La-EL	Oz d	سسا	سسن
Switch \$5	To-ft	Otoj	•	سيط
Switch #19	Lo-H1	01.1	<u></u>	
Vernier Cutoff Command (Re	ar)			
•	Lo-H1	3.0±0.1	. مسا	<u></u>
	product to the second of the s	1.010.1	' مسل	سسا
wisch 718	Lo-H1	5.010.1		
	Parameter  Staging Command (Ref)  Switch #2  Switch #2  Switch #3	Parameter Level  Staging Command (Ref)  Switch #2  Switch #2  Lo-Hi  Switch #3  Lo-Hi  Switch #5  Switch #5  Switch #6  S	Parameter Level Time (Sec  Staging Command (Ref)  Syltch #1 H-Lo O.11.05  Syltch #2 Lo-Hi O.12.05  Switch #2 H-Lo 1.02.025  Lo-Hi 3.716  Switch #3 Lo-Hi 0.12.05  Switch #4 Lo-Hi 0.12.05  Switch #5 Lo-Hi 0.12.05  Switch #6 Lo-Hi 0.12.05  Switch #7 Hi-Lo 5.01.1  Switch #1 Lo-Hi 0.12.05  Switch #1 Lo-Hi 0.12.05  Switch #1 H-Lo 5.01.1  Switch #1 Lo-Hi 0.12.05  Switch #1 0.12.05  Switch #1 Lo-Hi 0.12.05  Switch #1 0.12.0	Parsmeter   Level   Time (Sec   Level     Staging Command (Ref)

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#### OPERATING CYCLE DATA SHEETS

Gyecan	on 5, 11 4.9.1  Cycle After Y Axis will  JERATURG CYCLE TEST	Rngi	neer H. J.	Gusal	4
(a)	Parameter	Level	Time (sec)	Level	Time
	Input Voltages 400 opa 28 volts	115 volta 27 volta	±2.7 volts	11500Hz 2800Hz	
	Launch Command (Ref.) Switch #9	Hi-Lo Lo-Hi	154.05 194.05	-	اسا اسا
	Switch #10	Hi-Lo Lo-Hi	2a.05 15a.05	<u>اس</u>	اب است
	* Switch /11	H1-T0	24,05 194,1 05	  -  -	Jan.
	Output of terminals F and L of U3J2	0,+0,2 2,240,125 1,740,125 1,940,125 1,840,125 1,440,125 1,040,125 0,740,125 0,640,125	15a.1 27s.1 39a.1 54a.1 64a.1 744.1 89a.1 105a.1 120a.1	TIKKKKKK	714414414
•			g +0.1±0.1	-	

Noter

Switches #1, 2, 3, 4, 5, 6, 7, 9, 10

Switches #12, 13, 14, 16, 17, 18, 19

Switches #11

* Swill was intermittent durning vibration

LO-8.043.0 volts
Hi-12.542.5 volts
LO-0 volts
Hi-28 volts supply
+0 -4
LO-18+0.9 volts
Hi-9440.45 volts

Etapard Time 45 Ars.

## OFFRAT NO CICLE DATA SHEETS (CONTINUES)

Peregrapa 4.7./
Specimen S/N 4

Date 3 Nou. 59
Engineer N. H. H.
Inspection Alexand

Proof Cycle After YAXIS vibration

h.1.9	OPERATING CYCLE TEST				
	Parameter	Lovel	Time (Sec	) Level	Time
(d)	taging Command (Ref)		*		
•	stick /	H1-10	0.11.05	مساميع	حسما
	Switch #2	Lo-It	0.11.05	أ سا	سعل ا
	Switch #2	H - 0	3.01.025	ا میا	
		Lo-H1	3.7:005	اسا	<u></u>
	palten #3	Lo-HL	0.12.05	1	1
	241044 47	18-10	6.71.05		
	Switch /	La-ki	6.71.05	ندند میمارد. از ساز ساز	
	Switch 15	Lo-HI	0.12.05	سر س	
		HK-V	10,011,0		b
	3vd teh 75	La-HI	0.1:.05		
	Switch 7	HI-Le		w K	
	Switch #12	La-H	0.12.04	وسيورهما	<u>kar</u>
	Jaitoh 113	10-41	3.1.8.025		
	Switch #14	Lo-E1	64.13.0	: سط سط	<u> </u>
(e)	Sustainer Cutoff Command (	Ref)	· _		
	Switch #3	T=-117	ာ∗ဂ်	اسدا	1
	Switch 05	La-HI	01.5	-	
	Svitch #19	Lo-Ki	01.92		-
(1)	Vernier Cutoff Command (Re	r)			
. ,	Switch #16	Lo-H1	3,010,1	Acres .	-
	vitch /17	10=11	1.010.1		
	Switch 718	La-H1	5.010.1	4	
	and the second s				-

* Sw *11 was intermittent durning wibration

Flagard Time 45 hm.

PART . 54

#### INTITIAL SATISFACTORY PURPORMANCE DATA SHEET

SPECDER S/N 4

This data shout is to be used in conjunction with, the operating sycle data sheat when, performing the tests outlined in paragraph 4.1.8. Inspection Manager 11 Force REMARKS

Para.

(b)

Parameter

Valtage at Pins J and A of U3J3

Tolerance

In phase max, and out of phase max. 7.5 ±2.0 volts, max. voltage limits to be reached in 70 ±20 seconds.

Voltage 9.4 volts
Time 65 sec.

(c) Arm-Safe Switch

Successful operation as indicated by indicator lights shall secur in 10 15 seconds.

tim 8 sec

10011 7A2248-2

110 55

#### OPERATING CYCLE DATA SHEETS

Paragraph 4.1.8

Specimen S/N 4

Engineer 34. X. Dusa

Inspection Stressell

Air Force REHOMAGE

4.1.9

OFERATING CYCLE TEST

	Farameter	a managan yang menang menganakan mengan yang berangan	Level	Time (sec)	Level	Time
i I	Input Voltages	400 cpa	115 volta		115 wolfs	
_	and the second section of the section o	28 volts	27 volts	#2.7 volts	280014	
	Launch Command (1	Ref.)	Hi-Lo	154.05	N	16.
	Switch #9		Ia-hI	194.05	11.5 wolt	
-		igana — Maranathur kyatifi kumina janus senindilingah <u>aman</u> ahah	Hi-lo	2a.05	11.50.14	
	Switch #10		Lo-H1	15+.05	-7.5 with	T
	O. 14.5 M11		Lo-Hi	24,05	18.6 .N	20 10
	Switch #11		H1-L0	194.1	1990 +019	18055
<b></b> -	Output of termine	Ja V and I	0,+0,2			
!	of U3J2	is r and b	2.240.125	15+.1	13.34 watt	
			1,7=0,125	27:.1	1.74 wolf	
			1.4.0.125	394.1	1.73 with	330 10
			1.840.125	540.1	1/83 my	540 30
1			1.640.125	64s.I	1.63 0.14	640 70
•			1.340.125	744,1	Heu /64	
			1,0-0,123	894.1	1.00 my	17.0 sq
			0,7=0,125	1054.1	Je valt	
į			0.6=0.125 0.0 St	120*.1 # +0.1*0.1	-57 west	720.0 10

#### Notes

Switches #1, 2, 3, 4, 5, 6, 7, 9, 10 Switches #12, 13, 14, 16, 17, 18, 19 Switches #11 10-8.003.0 volts
Hi-12.502.5 volts
Lo-0 volts
Hi-28 volts supply
+0 -4
Lo-18-0.9 volts
Hi-940.45 volts

Emporal Time 45.5 hrs

56 MAL

#### OFERA? HO CYCLE DATA SHEETS (CONTINUES)

Paragraph 4.1.8 Specimen S/M 4

Date 6 Nov Engineer Inspection Air Force Ale Romeso

Initial Satisfactory Performance Test

4.1.4 operating cycle test Loval Time (Sec) Level aremoter (d) staging Command (Ref) N.O us if z Switch \$2 H-IO 3.1:.05 -4-0 3014 OHO SPE. Lo-IL 3,11,35 -65 00 H110:10 30C Switch #2 11.0 00 14:3.00 100 3.720 Lo-H1 -6.5 will 3,70 sec. Switch #3 LO ·HS -7.0 v. Hr 0.10 sec. HI - LO 11.6 vett 6.70 18 142 mile 6.70 194 Switch #L 6.71.05 Switch 65 10-10 0.1:.05 -6.5 us 14 Q.10 200 H-L 10,011,0 /10 - 111/0,0 Fec 16.0 mm 0.10 ses 3 mich 16 The Ed 0.12.05 Switch 17 3,52,1 H1-La 3.120.025 25.5 with 0/0 sec. Switch #12 14-13 Switch 113 La-R1 bwitch ili la-in 66±3.0 25.5 v. 1 64.0 sm (e) Sustainer Cutoff Command (Nef) Switch #3 للاحما -75 with ,000 im. Switch #5 LO-HI 76.5 willy 0.00 sec, Switch \$19 Lo-K1 27.A 25.5 mp 0 00 50. (1) Vertiler Cutoff Jermand (Ref) Spicet \$16 3.020,1 LO-H! 25.0 mHz. 200 500. 2010.1 150 vits 400 85 Ovisch [] W-H Switch 118 La-H1 5.010.1 75.0 . H, 5.00 500

REPORT 7A2248-4

#### JERATING CYCLE DATA SHEETS

Paragraph 4.2.1.2 a	into 6 Nov. 59
Specimen S, N 4	Engineer M. Y. Muse
Proof Cycle at 40°F	Inspection Johnsoll
Troop engine at 10 r	Air Force R. MANNAR

4.1.9 OFERATING CYCLE TEST

4.1.7	STEIGHT AND CLOSE, TANK				
(b)	Parameter	level	Time (sec)	Lovel	Time
	Input Voltages 400 cps	115 volta		115 001/2	
Ĺ	2d volts	27 volts	#2.7 volts	28 0016	1
	Launch Command (Ref.)	Hi-Lo	154.05	!	<u></u>
	Switch #9	16-41	194.05	-	سا
	Switch #10	H1-lo	2= 05	<u></u>	-
		Io-H1	15*.05	سسا	سا
-	C. 14 - 1 433	Lo-H1	24,05	سا	سا ا
1	Switch #11	מו-נו	194.1 05	<u> </u>	<u> </u>
	Output of terminals F and L	0,+0,2		1	
	of UU2	2.2+0.125	15*.1		
		1,740,125	27.1		
		1.4=0.125	390.1		
		1.840.125	54.1	سرا	
i †		1.6-0.125	644.1	-	-
!		1.340.125	744.1	<u> </u>	1
<b>!</b>		1,00,125 0,7e0,125	89a 1 105a 1		
1		0.6-0.125	1201		
1		0.0 St	ig +0,1*0,1	-	-

#### Notes

Switches #1, 2, 3, 4, 5, 6, 7; 9, 10 Switches #12, 13, 14, 16, 17, 18, 19 Switches #11

10-8.0-3.0 volts
Hi-12.5-2.5 volts
Lo-0 volts
Hi-28 volts supply
+0 -4
Lo-18-5.9 volts
H1-94-0.45 volts

Elapsed Time 46 hes.

Dato 6 Nov. 59

Paragraph 4.2.1.2 a

Switch 118

### OPERAT NG CYCLE DATA SHEETS (CONTINUED)

Angineer 7/12 Specimen S/N 4 Impaction ALT POTOS AG HEMARD Proof Cycle At 40% 1.1.9 OPERATING CYCLE TES? Lovel Parameter Time (Sec) Level Time (d) staging Command (Ref) -Mich () ماءظ 0.11.05 Svalen 2 Lo-Hi 0.12.05 Switch #2 HI-LO LO-H1 owitch #3 LO-KI HI-LO Switch 14 Switch 15 La-HI H-L 10,011.0 3rd tch 75 Lo-Ki Switch 07 HI-Le 5.02.1 Switch /12 A-H Switch 113 IA-RI Switch Ill 13-61 6423.0 ( · ) Sustainer Cutoff Command (Ref) Switch #3 IA-HI Switch 15 Lo-it Switch #19 LA-HI 05.4 Vernier Cutoff Command (Rof) (1) Switch 11/ LO-HI 3.0±0,1 Jwitch 217 LO-HI

1.020.3

Lo-Hi

PEPORT TAZLEZ-

#### DIERATING CYCLE DATA SHKETS

Special Proof Altitud		Engi	Nee. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3.	quali	<u>-</u> -
4.1.9 	PERATING CYCLE TEST				
(a)	Parameter	Level	Time (sec)	Level	Time
	Input Voltages 400 cps 28 volts	115 volta 27 volta	#2.7 Volts	115 an Hz 28 wolfs	
	Launch Command (Ref.) Switch #9	Hi-lo Lo-Hi	154.05 194.05	· · · ·	<u></u>
-	Switch #10	Hi-io Io-ii	2±.05 15±.05	<u> </u>	
	Switch #11	lo-Hi Hi-lo	24,05 194,1 05	<u> </u>	₩ ₩
	Output of terminals F and L of U3J2	0,+0,2 2,2=0,125	154.1	15	
		1.7±0.125 1.9±0.125 1.8±0.125 1.5±0.125	37e.1 39e.1 54e.1 64e.1		
		1.3aC.125 1.0aC.125 1.0aC.125 0.7aC.125	744.1 894.1 1054.1		

Motes

Switches #1, 2, 3, 4, 5, 6, 7, 9, 10

Switches #12, 13, 14, 16, 17, 18, 19

Switches #11

ID-8.0m3.0 volts
Ri-12.5m2.5 volts
Lo-0 volts
Hi-28 volts supply
+0 -4
Lo-18m3.9 volts
Hi-9/s0.45 volts

Stg +0.1-0.1

Elagged Time 47 hrs.

S. AR HASTROMAUTICS

### OPERAT (G SYSLE DATA SHEETS (CONTINUES)

Specimen S/N 4

Date 7 Oct. 57
Engineer 21. X. Augustine Impection Interesting
Air Force Engage

# Proof Cycle After - 65% and 3.44 "Ng Altitude Test

	OPERATING CYCLE TEST			
	Parameter	Level	Time (Sec) Love	
	taging Command (Ref)			
	juitch #1	H1-LO	سو مد کامیدادن	
	Svitch 12	Lo-H1	0,12,05	
	Switch #2	d-10	3.02.025	
		Lo-ii	3.72005	
	Switch #3	Lo-Hi	3.12.05	
		H-10	3.72.05	
	Svitch /4	Le-M	6,72,05	طسند
	Switch 15	IA-HI	0.12.05	
		H-L		
	Sulleh 16	—————————————————————————————————————	0.12.05	
	Switch 77	HI-Le		
-	System #12	14-HL	5,01,1	
-	Switch 11	Lo-Ei	3.120.025	
	3vi toh /14	Le-Ri	41 A2 A	<u></u>
	Sustainer Cutoff Command (Re	P)	to the state of the second of	entergener en eller telegrape en en
	Switch #3	Lo-Ht	سر و.بر	
	Switch #5	Lo-HI		
	Switch #19	La-H1	03.2	
	Views on Cuba Courses and	and retire a game, agreement	energia de la como e describir de la composición del composición de la composición d	
	Vernier Cutoff Command (Ref)	* - **4		•
	Switch 116	io-#1	1,010,1	
	witch 117	<b>4-4</b>	ha DaDaling	. V
	sutten 113	10-H1	5.010.1	. پير

CONVAIR ASTRONAUTICS

PEPONT 7A2248-2

#### CHERATING CYCLE DATA SHIETS

Faragrant 4.2.1.2 d	Date 10 Nov. 57
Simor and S. N. 4	Engineer 21. 2. These
	Inspection Bussell
Proof Cycle After 160% And 3.44 Mg	Mr Force R.E. Howard

4.1. LEHALIN CICLE TEST

Farsactor		Level	Time (sec)	Level	Time
Injut Voltages	400 gua	115 volta		15 will	
	28 volts	27 volts	±2.7 volts	28 w. 1	
Launch Comman: (	Ref.;	Hi-Lo	154.05		
Switch #9	Lo-H1	1903	1	L.E.	
				<u> </u>	_1_
Jwitch #10		HI-IO	24.05		.برا
	and the state of t	Lo-Hi	15*.05	<u> </u>	
		io-H1	24,05		مر
Switch #11		H1-LO	19,1	IV	سا
man and programmer			05	1	
Output of termin	ais Panu L	0,+0,2		_ سا	
or UN2		2.2.0.125	15a.1		ما
		1,7:0,125	27: .1		
		1.444.125	394.1		1
			544.1	سد	
			64.1		
		1.300.125	744.1		الغ
		1,0-0,125	894,1		
		0.7.0.125	1054.1	1	1
		0.6-0.125	1204.1	11	
		0.0 St	g +0.1±0.1	! <b>~</b>	مسما

Neter

165

Switches #1, 2, 3, 4, 5, 6, 7, 9, 10 Switches #12, 13, 14, 16, 17, 18, 19 Switches #11

IO-8.0=3.0 volts
Hi-12.5=2.5 volts
Lo-0 volts
Hi-28 volts supply
+0 -4
Lo-18=0.9 volts
Hi-94=0.45 volts

## OPERAT NO CYCLE DATA SHIRETS (CONTINUED)

Specimen S/N 4

Engineer 1. Suns Inspection | Sussell Air Force Religional

# Proof Cycle After 160°F And 3.44"Hy Attitude Test

	OPERATING CYCLE INST				
	iaraneter	Lorel	Time (Sec	) Level	Time
(3)	taging Command (Ref)				
3	-vitch el	HI-IO	0.1:05	<b></b>	-
	Switch #2	Lo-HL	0,14,05		
	Switch #2	14-10	3,01,025		
	-	Lo-ii	3.7:005	. سا	ي
		•	and the second		
	switch #3	Lo-!4	3,12,35		سيا
		H1-10	2.71.05		~
	Switch Pl	Lo-H	6.7:.05	10 10	
	Switch #5	Le-Hi	0.12.05	سد	-
		H-L	10,011,0	أسسا	
	3rd teh. #6	Le-HI	0.12.05	سسا سیا	
	Switch 17	H1-Lo	5,5:,1	سر سر	٢.
	3 vite: #12	Lo-HL	0.12.05		
	Switch /D	Lo-Hi	0.14.05		<u> </u>
	Switch III	Lo-H	6.13.0		
( • )	Sustainer Cutoff Command (	Ref)		-	
	Switch #3	La-HY.	ે <b>ક.</b> ∳	1 1	صد ا
	Switch #5	Lo-KI	02.4	رب سیمیا د سمیا	k.
•	Switch #19	Lo-Hi	O4.85	سا.	
	The second secon	A series of the	rounce in seem a money proper of		
(r)	Vernier Cutoff Command (Re	<b>(?)</b>	!	•	
	Switch 116	Lo-H1	3.010.1	: سيا	سما
	Jvitch 117	io-it	320.1	شر سر	
	Switch /18	Londi	5.010.1	1	-
	and another the substance of the substan	The second second second second			

PEPORT 74248-2

#### UPERATING CYCLE DATA SHEETS

OLDANIA CICLE DATA CICLE							
Special	in 4.2.1.2 d	-	Engi Ins:	10 Nau. neer H. X. section K	Sura	- Z	
4.1.0	SPERATING CYCLE TE	<b>1</b>					
(0)	Faraseter		ievel	Time (pec)	Level	Time	
	Input Voltages	400 ope 23 volts		*2.7 volts	//S as He 28 ws He		
	Launch Command (Re. Switch #9	<b>r.</b> )	Hi-Lo Lo-Hi	154.05 194.03	<u></u>	<u> </u>	
}	Switch #10		Hi-Io Lo-Hi	2x.05 15*.05	<u></u>	بر ب	
	Switch #11	aga, anta-da-cantina, -dada, attiputu-mana -dada.	H1-T0	24,05 -94,1 05	-	سرا سا	
	Output of terminals of U3J2	s F and L	0,+0,2 2,2*0,125 1,7*0,125 1,9*0,125 1,8*0,125 1,6*0,125 1,3*0,125 1,0*0,125 0,7*0,125	15a.1 27a.1 39a.1 54a.1 64a.1 744.1 89a.1	***************************************	KKKKKK	
:			0.6=0.125	1204.1	سا		

0.0

Notes

Switches #1, 2, 3, 4, 5, 6, 7, 9, 10 Switches #12, 13, 14, 16, 17, 18, 19 Switches #11 10-8.0-3.0 volts
Hi-12.5-2.5 volts
Lo-0 volts
Hi-28 volts supply
+0 -4
Lo-18-0.9 volts
Hi-94-0.45 volts

Stg +0.1=0.1

Best Available Copy

Elapord Time 50 km

### OPERAT NO CYCLE DATA SHEETS (CONTINUED)

Yaragh po <u>4.2.1.2d</u> Specimen 5/N <u>4</u>

Engineer J. H. Share
Inspection France
Air Force R.F. Newaro

### Operational Altitude Test (Imm Hg.)

1.9	CITERATING CYCLE TEST				
	: arabeter	Lovel	Time (Sec	) Level	Time.
(a)	taging Command (Ref)			-	
		H-Io	0.1:.05	أسليل.	
	Switch #2	Lo-H1	0,12,05	-	سسا
	Switch #2	H1-10	3.02.025	أ حياً .	
		Lo-il	3.72005	<u>.</u>	سر
	Switch #3	Lo-Hi	0,11,05		
4		HI-10	\$ . 7± a 05		
	switch /4	Lo-Hi	6.71.05		
	Switch #5	Le-HI	0.12.05		
		H-L	10,011,0		Lance
	3rd Ech #5	Lo-Hi	0.1:.05	سيا سيل	L.
	Switch 17	HI-IO	5.01.1	alle Same	
	Svite: #12	Le-H	9.1t.05		
	Switch /13	Lo-H1	3.129.025	٠.	
	Switch /L	Le-Hi	6.13.0	<u> </u>	
• )	Sustainer Cutoff Command (	Hef)			
	Switch #3	re-ig	⊃ <b>z • ⅓</b>		
	Switch #5	io-iti	3.1		
	Switch #19	Le-H1	02.05		1
	The second secon	n vers on the desire of the second of the se	و مصور سر ور	K.	
(r)	Vernier Cutoff Command (Re	-	A Comment of the Comm		
	Switch 116	i <u>o-i</u> l1	3.020.1		-
	witch [17	ig-it	4. 720.1	بالمسمعات ا	-
	witch /18	Lo-H1	5.010.1		-